



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

*[Handwritten signature]*

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,281	01/20/2004	Minoru Ando	Q79125	6860
23373	7590	12/21/2005		EXAMINER
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			MACCHIAROLO, PETER J	
			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/759,281	ANDO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Peter J. Macchiarolo	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any extended patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 07 November 2005.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-9 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

The reply filed on 11/07/2005 consists of changes to the claims and remarks related to the prior rejection of claims in the previous Office Action. The above have been entered and considered. However, pending claims 1-9 are not allowable as explained below.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 3, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over previously cited Blackmore (USPN 1701401; "Blackmore") in view of Friedman (USPN 3186209; "Friedman").**

Regarding claim 1, Blackmore shows in figures 1-6, a method of making a metallic shell for a spark plug, the metallic shell including a multi-stepped through hole, an intermediate tubular portion, a tip end side tubular portion disposed on a tip end side of the intermediate tubular portion and a base end side tubular portion disposed on a base end side of the intermediate, tubular portion, the through hole including, in the order from a base end side to a tip end side of the spark plug, a large diameter hole section (fig. 3; top 15), an intermediate diameter hole section (fig. 3; middle 11) smaller in diameter than the large diameter hole section and a small diameter hole section (fig. 3; bottom) smaller in diameter than the intermediate

Art Unit: 2879

diameter hole section, the method comprising the steps of; cutting a metal pipe (9) that is used as a starting material to a predetermined length and thereby preparing a pipe-shaped blank; and subjecting the blank to a deformation process (column 1, ll. 35-41) and thereby forming the blank into the metallic shell, installing an insulator assembly having an insulator (17) in which a center electrode (not labeled) and a terminal member (not labeled) are installed in the metallic shell by inserting the insulator assembly into the metallic shell from the base end side thereof (col. 1, ll. 45-48); and joining an end of a ground electrode (not labeled) to a tip end of the metallic shell and making another end side of the ground electrode be disposed opposite to the center electrode.

Although Blackmore does not expressly state exact diameters of the pipe and metallic shell, Blackmore does infer the inner diameter of the pipe is the same as the small diameter hole section of the metallic shell. In column 1, lines 32-35 Blackmore discloses the pipe serves as the shell of a spark plug, and that only the large section is flared out to change diameter. Nowhere in the remaining disclosure does Blackmore suggest that any more machining is necessary to complete the spark plug shell. Therefore, the inner diameter of the pipe must be the inner diameter of the small section. Furthermore, the drawings support this assertion since it appears in figures 1-3 the small diameter hole section is the same diameter as the pipe. Therefore, one of ordinary skill in the art would recognize that the small diameter hole section of Blackmore is the same diameter of the original pipe blank. One would be motivated to this arrangement to minimize manufacturing time, thereby reducing overall cost.

Blackmore states that the pipe is "flared" but is silent to the specific type of manufacturing required for this outward expansion.

Art Unit: 2879

However, Friedman teaches in column 3, lines 46-51 that in order to preserve strength of a blank for a spark plug, the preferred method is extrusion.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture a spark plug by Blackmore's method, and extruding the large diameter hole section to preserve strength of the spark plug shell.

Regarding claim 3, as discussed above, Blackmore teaches and shows an inner diameter of the pipe (9) is equal to a diameter of the small diameter hole section and smaller than a diameter of the large diameter hole section.

Regarding claims 7-9, Blackmore and Friedman are silent to the exact dimensions of the final spark plug.

However, one of ordinary skill in the art understands that the final spark plug must have certain dimensions so as to properly fit into an internal combustion engine, and that a standard spark plug has length L that exceeds 19mm, and diameter D is less than 10.5mm, and axial length T exceeds 2mm.

Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the proper size of a component involves only routine skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Blackmore and

Friedman's spark plug with the recited dimensions for proper operation in specific internal combustion engines.

**Claims 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmore in view of Friedman in further view of in further view of previously cited Fischer et al (CA 645083; "Fischer").**

Regarding claim 2, Blackmore discloses the pipe is flared out to form the inner diameter of the large diameter hole section, thereby implying the inner diameter of the pipe is smaller than the large diameter hole section.

Blackmore is silent to the inner diameter of the pipe being larger than the small diameter hole section, but instead teaches they are equal.

However, Fischer shows that using a punch to extrude a blank allows for any desired flange configuration which will benefit the overall device, such as the inner diameter of the pipe being larger than the small diameter hole section.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the spark plug of Blackmore with the pipe being larger than the small diameter hole section, to allow for proper operation and fit within several internal combustion engine configurations.

Regarding claims 5 and 6, Blackmore is silent to forming by extrusion the second, third, fourth, and fifth steps.

Art Unit: 2879

However, as discussed above, Friedman teaches extrusion is the preferred manufacturing method. Furthermore, Fischer teaches that using a punch and a specific die to extrude a blank into a specific shape allows for a modular manufacturing process that can meet several different spark plug formations to fit a variety of engines.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the spark plug of Blackmore with the extrusion steps to allow for operation and fit within several internal combustion engine configurations while preserving overall strength of the spark plug shell.

**Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmore in view of Friedman in further view of previously cited Hamilton (USPN 1726264; "Hamilton").**

Regarding claim 4, Blackmore is silent to an outer diameter of the pipe is larger than that of the tip end side tubular portion of the metallic shell and smaller than that of the intermediate tubular portion.

However, modifying the machining process of the pipe to manufacture such a spark plug shell is well within the skill of one in the art. Furthermore, one of ordinary skill would arrive at this configuration to allow for a better internal securing configuration (internal shoulder), as evidenced by Hamilton.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the spark plug of

Art Unit: 2879

Blackmore with the recited internal configuration to allow for a better internal securing configuration.

***Response to Arguments***

Applicant's arguments with respect to claim have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

USPGPUB 20020149308 to Suzuki et al is evidence that spark plugs must conform to certain standard dimensions, and that these dimensions correspond to the limitations of the above claims 7-9.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

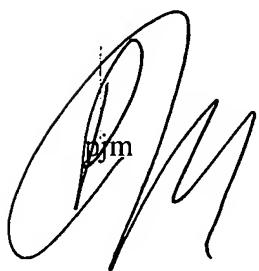
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2879

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Macchiarolo whose telephone number is (571) 272-2375. The examiner can normally be reached on 8:30 - 5:00, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on (571) 272-2475. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JOSEPH WILLIAMS  
PRIMARY EXAMINER